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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/507,769	02/18/2000	Richard Kent Passman	D-20866	8623

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Praxair S T Technology Inc
Law Dept - M1557
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EXAMINER

NGUYEN, KIMBERLY T

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/07/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

110

Office Action Summary	Application N .	Applicant(s)	
	09/507,769	PASSMAN ET AL.	
	Examiner	Art Unit	
	Kimberly T. Nguyen	1774	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2002 .
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ :
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This action is in response to the RCE and Remarks both submitted on September 6, 2002.

Claim Rejections - 35 USC § 103

Claims 1-2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al., U.S. Pat. No. 5,840,386.

Hatch shows a sleeve for a liquid transfer roll comprising a carbon fiber-reinforced plastic inner tube (substrate) (claim 1 and column 6, lines 26-29), at least one compressible intermediate layer of polyurethane elastomer (first polymeric layer) (column 3, lines 50-51 and column 5, lines 54-56), a reinforced intermediate tube comprising polyurethane elastomer (second polymeric layer) (claim 1), and a thermally sprayed coating (column 4, lines 32-36). Hatch shows that the intermediate layers comprise a polyurethane elastomer or silicone (column 5, lines 54-56) and that the reinforced intermediate tube may comprise glass fibers (ceramic particulate) (column 6, lines 26-29). Hatch shows that the intermediate tube (first polymeric layer) comprises the same materials as the inner tube (substrate) such as metal wires (metal particulate) (column 5, lines 67 to column 6, lines 102 and column 5, lines 13-21). Hatch also show that the intermediate tube comprises a plastic reinforced with glass fiber (silicon oxide particulate) (column 6, lines 26-29).

Hatch does not show that the intermediate tube (second polymeric layer) contains about 20-85 weight percent of particulate as in instant claims 6-7. Hatch does not show that the coating attaches to the substrate with the tensile strength as in instant claim 8 nor does Hatch show the size of the particulate material as in instant claim 9. Further, Hatch does not show the

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thicknesses of the intermediate compressible layer (1st polymeric layer) and intermediate tube (2nd polymeric layer) as in instant claim 10. However, such ranges of concentrations, tensile strength, particulate size, and thicknesses are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are result-effective as they control the level of particulate reinforcement, degree of attachment of the coating to the substrate, and mechanical strength of the sleeve and liquid transfer roll. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the sleeve and roll with the limitations of the ranges since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 1-12 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al., U.S. Pat. No. 5,840,386 in view of Hess et al., U.S. Pat. No. 3,698,053.

Hatch shows a sleeve (multi-layer coating) for a liquid transfer roll (fluid metering roll) adapted to mounted around a mandrel (substrate and cylindrical roll) comprising an epoxy resin inner tube (first polymeric/epoxy layer) (claim 1 and column 5, lines 13-19), a glass fiber- or nickel metal wire-reinforced (particulate) intermediate tube comprising epoxy resin (2nd polymeric/epoxy layer) (claim 1 and column 5, lines 67 to column 6, lines 1-2 and column 5,

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lines 13-21), and a thermally sprayed coating (column 4, lines 32-36) comprising chromium oxide (column 4, lines 14-24).

Though Hatch shows that the intermediate tube is substantially thicker than the inner tube (column 7, lines 35-40), Hatch does not show the thicknesses of the tubes as in instant claims 10 and 12. Hatch does not show the tensile strength as in instant claim 1. However, such a range of thicknesses and tensile strength are properties which can be easily determined by one of ordinary skill in the art. With regard to the limitation of the ranges, absent a showing of unexpected results, it is obvious to modify the conditions of a composition because they are merely the result of routine experimentation. The experimental modification of prior art in order to optimize operation conditions (e.g. ranges) fails to render claims patentable in the absence of unexpected results. All of the aforementioned limitations are optimizable as they control the mechanical strength of the sleeve and liquid transfer roll. As such, they are optimizable. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the sleeve and roll with the limitations of the ranges claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Hatch does not show that the mandrel (substrate) is a fiber reinforced polymer containing carbon fibers as in instant claims 1, 11, and 14. Hess shows a cylindrical mandrel comprised of an epoxy polymer matrix reinforced with carbon fibers (column 2, lines 1-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mandrel of Hess in Hatch because it is well known in the art that such a mandrel can be utilized in paper making machinery (column 1, lines 10-12).

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Claims 1, 3, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al., U.S. Pat. No. 5,840,386 in view of Hess et al., U.S. Pat. No. 3,698,053 in further view of Fujita et al., U.S. Pat. No. 5,296,582.

Hatch and Hess are relied upon as above for claims 1 and 11. Hatch does not show that the inner and intermediate tube epoxy material is a bisphenol F/epichlorohydrin and diethylenetriamine as in instant claims 3 and 13.

Fujita shows a curable epoxy resin composition for use in molding materials and laminates comprising bisphenol F/epichlorohydrin and diethylenetriamine (column 5, lines 3-7 and column 6, lines 67-68 to column 7, lines 1-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use this epoxy resin because it is known in the art that the resin has excellent tensile characteristics and is widely used in composite materials such as fiber reinforced plastics.

Response to Arguments

Applicants' argument filed September 9, 2002 have been fully considered but they are not persuasive.

On pages 1-2, Applicants argue that the invention of Hatch is different than Applicants' invention because Hatch teaches a thermal spray-coated metal sleeve while Applicants' two polymer layer design operates without a metal sleeve. Examiner is not persuaded. Hatch shows the compositions of the substrate, first polymeric layer, second polymeric layer, and at least one thermally sprayed material coating as in instant claim 1 (claim 1, column 6, lines 26-29, column 3, lines 50-51, column 5, lines 54-56, and column 4, lines 32-36).

On pages 1-2, Applicants ~~argue~~^{argue} that Hatch does not show a first polymer layer free of fibers and particulate, a second polymer layer containing particulate or a thermal spray layer coating the second polymer layer. Examiner disagrees. Hatch shows at least one compressible intermediate layer of polyurethane elastomer (first polymeric layer) (column 3, lines 50-51 and column 5, lines 54-56), a reinforced intermediate tube comprising polyurethane elastomer reinforced with glass fiber (silicon oxide particulate in a second polymeric layer) (claim 1 and column 6, lines 26-29), and a thermally sprayed coating (column 4, lines 32-36). Hatch does not show that the at least one compressible intermediate layer (first polymeric layer) comprises any fibers and, absent any evidence to the contrary, would be “free of fibers” as in Applicant’s instant invention.

On page 2, Applicants argue that Hatch and Hess do not disclose or suggest a first polymer layer free of fibers and particulate and a second polymer layer containing particulate with a thermal spray layer coating the second polymer layer. Examiner disagrees. As shown above, Hatch shows at least one compressible intermediate layer of polyurethane elastomer (first polymeric multi-layer) (column 3, lines 50-51 and column 5, lines 54-56), a reinforced intermediate tube comprising polyurethane elastomer reinforced with glass fiber (silicon oxide particulate in a second polymeric layer) (claim 1 and column 6, lines 26-29), and a thermally sprayed coating (column 4, lines 32-36). Hatch does not show that the at least one compressible intermediate layer (first polymeric layer) comprises any fibers and, absent any evidence to the contrary, would be “free of fibers” as in Applicant’s instant invention. Further, Hess is used *in combination with* Hatch to show that it is obvious to make the mandrel (substrate) of Hatch to comprise an epoxy polymer matrix reinforced with carbon fibers.

On page 2, Applicant argues that Fujita et al. does not disclose using a bisphenol F-type epichlorohydrin and diethylenetriamine resin for bonding a particulate-containing polymer to a fiber reinforced composite because the resin has excellent properties for bonding and withstands the indirect thermal stresses induced from thermal spraying. Examiner is not persuaded. Fujita is used in combination with Hatch and Hess to show that it is obvious to use the epoxy resin because it shown to be known in the art that the resin has excellent tensile characteristics and is widely used in composite materials such as carbon fiber reinforced plastics (column 1, lines 4-62). Further, in response to Applicant's argument that Fujita does not specifically disclose using the resin to bond a particulate-containing polymer to a fiber reinforced composite, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. It does not matter what the intended use is in an article claim. The combination of the inventions in Hatch, Hess, and Fujita show Applicant's invention without any structural differences. Thus, such a combination would be capable of "bonding particulate-containing polymer to a fiber reinforced composite," which is the intended use of Applicants' invention. The prior art structure of Hatch, Hess, and Fujita thus meets the claims of Applicant's disclosure.

Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly T. Nguyen whose telephone number is (703) 308-8176. The examiner can normally be reached on Monday to Friday, except on every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

A handwritten signature in black ink, appearing to read 'Cynthia H. Kelly', is written over the typed name and title.